



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/010,813	11/13/2001	Samuel C. Lay	MCD124	3067

7590 08/13/2003

Stuart T. Langley, Esq.  
Hogan & Hartson, LLP  
Suite 1500  
1200 17th Street  
Denver, CO 80202

EXAMINER

PHAN, MAN U

ART UNIT	PAPER NUMBER
----------	--------------

2665

DATE MAILED: 08/13/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.  
10/010,813

Applicant(s)  
Lay et al.

Examiner  
Man Phan

Art Unit  
2665



-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on Nov 13, 2001
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.
- ## Disposition of Claims
- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above, claim(s) \_\_\_\_\_ is/are withdrawn from consideration
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3, 6-8, 11-13, 16-19, 21, and 23-25 is/are rejected.
- 7) ☒ Claim(s) 4, 5, 9, 10, 14, 15, 20, and 22 is/are objected to.
- 8) ☐ Claims \_\_\_\_\_ are subject to restriction and/or election requirement

## Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some\* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\*See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s). 3, 5 6) ☐ Other:

### **DETAILED ACTION**

1. The application of Lay et al. for a "Method and apparatus for providing optimized high speed link utilization" filed 11/13/2001 has been examined. Claim 1-25 are pending in the application.

#### ***Specification***

2. The disclosure is objected to because of the following informalities:

Page 13, line 14: "frame reader 245" should change to --frame reader 275--

Page 16, lines 7, 11,13 and 14: "UPM 300" should change to --UPM 330--.

Appropriate correction is required.

#### ***Claim Objections***

3. Claim 6 is objected to because of the following informalities: The "XAUI " must be spelled out. Also, any structural detail that is essential for a proper understanding of the disclosed invention should be shown in the drawing. MPEP § 608.02(d).  
Appropriate correction is required.

4. Claims 1 and 24 are objected to because of the following informalities:

The claims contain the phrase "adapted to" (line 2). It has been held that the recitation that an element is "adapted to" perform a function is not a positive limitation

but only requires the ability to so perform. It does not constitute a limitation in any patentable sense. *In re Hutchison*, 69 USPQ 138. Appropriate correction is required.

***Claim Rejections - 35 USC § 112***

5. Claims 2 and 21 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claims 2 and 21 provide limitation for operation in accordance with "ANSI 10GFC", which makes the claim indefinite because such standard is subject to being changed. With further regard to claims, reliance on a commonly known standard such as "American national Standards Institute (ANSI) for Generic Flow Control (GFC)" in Fibre channel and Gigabit Ethernet as claimed is considered to be an obvious design choice by the artisan.

***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103© and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

8. Claims 1, 6, 11-13 and 24-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nelson et al. (US#6,148,004) in view of Kalkunte et al. (US#6,567,417).

In so far as understood with respect to claims 1, 13 and 24-25, Nelson et al. discloses a novel system and method for the establishment of dynamic connection from Fibre channel frames. Nelson teaches in Fig. 1 a functional block diagram illustrated a port module 10 receives data frames on a Fibre Channel (FC) bus 14; a FC front end 16 coupled to the fibre data interface for transmitting and receiving byte striped FC frames; a route controller (*matrix controller*) coupled to the front end 16 for route processing of the FC frames; and a backplane data interface operative for coupling to a plurality of ports (26<sub>0</sub>-26<sub>7</sub>) on a switching element 12 (Col. 3; lines 29 plus, and Col. 12, lines 22 plus). However, Nelson does not expressly disclose a Fibre data interface that is adapted to coupled to a 10.2 gigabit per second link. In the same field of endeavor, Kalkunte teaches

a method for providing a switching fabric that allows for rapid communication between the switches. The fabric supports link aggregation (trunking) of its eight 10 Gbps ports. Up to 4 trunk groups can be supported, each up to maximum of four members. The Trunk Group Table is used to derive the egress port when a packet has to go out on a trunk port. The RTAG is picked up from the Trunk Group Table by the trunk distribution logic to determine the distribution algorithm (See Figs. 2 & 3; Col. 4, lines 48 plus). Fibre Channel and Gigabit Ethernet are high speed data transfer interfaces that can be used to interconnect workstations, mainframes, supercomputers and storage devices.

With respect to claims 6 and 11-12, Nelson further teaches in Fig. 1 a functional block diagram illustrated a port module 10 receives data frames on a Fibre Channel (FC) bus 14, includes the link controllers 22<sub>0</sub> through 22<sub>7</sub> to which to direct a frame based upon the Originator Exchange Identifier (OX\_ID). Once a "bind" has been established to a particular one of the link controllers 22<sub>0</sub> through 22<sub>7</sub>, all subsequent frames with the same exchange identifier are automatically routed to the correct link controller 22 by the Fibre Channel front end 16 (Col. 3; lines 43 plus).

One skilled in the art would have recognized the need for effectively and efficiently providing link aggregation in the Fibre Channel switching architecture, and would have applied Kalkunte's novel use of the network switch fabric in the fast Ethernet into Nelson's teaching of the Fibre Channel port module. Therefore, It would have been obvious to a person of ordinary skill in the art at the time of the invention was made to apply Kalkunte's frame forwarding in a switch fabric into Nelson's method and apparatus for establishment of dynamic ESCON connections from Fibre Channel frames with the

motivation being to provide a method and system for providing link aggregation in a Fibre Channel fabric.

9. Claims 3, 7-8 and 18-19, 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nelson et al. (US#6,148,004) in view of Kalkunte et al. (US#6,567,417) as applied to the claims above, and further in view of Azizoglu et al. (US#6,430,201).

With respect to claims 3 and 7-8, Nelson and Kalkunte disclose the claimed limitations discussed in paragraph 8 above. However, Nelson and Kalkunte et al. do not expressly disclose the claimed feature of the integrated serializer/deserializer (ISD) modules, and the use of 8B/10B encoding scheme in the Fibre Channel port module. In the same field of endeavor, Azizoglu et al. teaches in Fig. 2 a block diagram illustrated the transmit side of a high speed line interface supporting multiple Gigabit Ethernet (GbE) and Fibre Channel (FC) signals, in which each of the two GbE inputs is first converted into a 10-bit parallel stream by a corresponding *serializer/deserializer (Ser/Des)* 20-1 or 20-2. The 10-bit parallel streams are then decoded by *8b/10b codecs* 22-1 and 22-2, which remove the run-length code overhead from each stream. Each codec 22-1 and 22-2 provides error information to performance monitoring (PM) logic 24 which monitors the bit error rate (BER) performance of the GbE signals. The output of each codec 22-1 and 22-2 is an 8-bit parallel stream at a bit rate of 1 Gb/s. A ninth bit is added to indicate whether a byte has originated from a special type of character called a "K-character" used in GbE systems. GbE employs these K-characters for the exchange of

control information, such as the indication of start and end of a packet, idle channel status, etc. Since all 256 8-bit characters occur within the data, a ninth bit is necessary to indicate the presence of a K-character. As a result, the aggregate rate at the output of the two 8b/10b codecs 22-1 and 22-2 is 2.25 Gb/s. The rate-reduced streams are supplied to multiplexing and framing logic 26, which multiplexes the streams together using an asynchronous statistical multiplexing technique described, and maps the multiplexed streams into synchronous frames in the OC-48 signal (Col. 4, lines 39 plus).

Regarding claims 18-19 and 23, they are method claims corresponding to the claims 1-3, 6-8, 11-13 and 24-25 above. Therefore, claim 18-19 and 23 are analyzed and rejected as previously discussed in paragraphs 8 & 9 above with respect to claims 1-3, 6-8, 11-13 and 24-25.

One skilled in the art would have recognized the need for effectively and efficiently providing link aggregation in the Fibre Channel switching architecture, and would have applied Azizoglu's multiplexing method using serializer/deserializer and 8b/10b codecs, and Kalkunte's novel use of the network switch fabric in the fast Ethernet into Nelson's teaching of the Fibre Channel port module. Therefore, It would have been obvious to a person of ordinary skill in the art at the time of the invention was made to apply Azizoglu's method and apparatus for transporting Gigabit Ethernet (GbE) and Fibre Channel (FC) signals in wavelength division multiplexed systems, and Kalkunte's frame forwarding in a switch fabric into Nelson's method and apparatus for establishment of dynamic ESCON connections from Fibre Channel frames with the motivation being to provide a method and system for providing link aggregation in a Fibre Channel fabric.



*Allowable Subject Matter*

4. Claims 4-5, 9-10, 14-15 and 20, 22 are objected to as being dependent upon the rejected base claims, but would be allowable if rewritten in independent form including all of the limitations of the base claims and any intervening claims.

6. The following is an examiner's statement of reasons for the indication of allowable subject matter: The closest prior art of record fails to disclose or suggest a Fibre Channel port module wherein the data output from the sublayer comprises four lanes of octet data at 318.75 MHZ, and the Integrated Seralizer/Desrializer (ISD) modules comprise four ISD modules each operating at a data rate of up to 3.1875 gigabits per second, as specifically recited in the claims 4-5,14-15 and 20, 22. The closest prior art of record also fails to disclose or suggest wherein the fibre channel further comprising a frame writer coupled to to the front end for storing fibre channel data in the buffer memory, the frame writer configured to handle a throughput at a data rate of 10.2 gigabit per second; wherein the buffer memory is configured to handle a 10.2 gigabits per second write and six simultaneous 1.7 gigabit per second reads, as recited in claims 9-10 and 16-17.

10. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

***Conclusion***

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

The Book (US#6,240,096) is cited to show the fibre channel switch employing distributing queuing.

The Soloway et al.(US#6,532,212) is cited to show the trunking inter-switch links.

The Endo et al. (US#6,275,494) is cited to show packet switching system, packet switching network and packet switching method.

The Nelson et al. (US#6,233,236) is cited to show method and apparatus for measuring traffic within a switch.

The Kalkunte et al. (US#6,535,510) is cited to show the switch fabric path redundancy

The Berman(US#6,185,203) is cited to show the fibre channel switching fabric.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to M. Phan whose telephone number is (703)305-1029. The examiner can normally be reached on Mon - Fri from 6:30 to 3:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Huy Vu, can be reached on (703) 308-6602. The fax phone number for the organization where this application or proceeding is assigned is (703)305-3988.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.

13. **Any response to this action should be mailed to:**

Commissioner of Patents and Trademarks

Washington, D.C. 20231

**or faxed to:** (703) 305-9051, (for formal communications intended for entry)

**Or:** (703) 305-3988 (for informal or draft communications, please label "PROPOSED" or "DRAFT")

Hand-delivered responses should be brought to Crystal Park II, 2021  
Crystal Drive, Arlington, VA., Sixth Floor (Receptionist).

Mphan

08/05/2003.

